NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD AND SPECIFICATION

VERTICAL DRAIN

(number)
CODE 630

DEFINITION

A well, pipe, pit or bore in porous, underground strata into which drainage water can be discharged.

PURPOSE

Provide an outlet for drainage water from a surface or subsurface drainage system.

CONDITIONS WHERE PRACTICE APPLIES

This practice is applicable in locations where the underlying strata can receive, transmit, or store the design discharge flow and other drainage outlets are not available and cannot be provided at a reasonable cost. The practice is applicable only in locations where a determination has been made that it is not contrary to state laws or regulations, and that it will not cause pollution of underground waters. This practice is limited to rural areas and can only be used when (1) to dispose of stormwater runoff occurring within the same topographic watershed, (2) the introduction of contaminants is kept to a minimum, and (3) only very shallow karst systems are involved. Very shallow karst systems are those where the sinkhole outlets in the same or adjacent watershed. This practice is also limited to the shallow karst systems found in Ste. Genevieve, Cape Girardeau and Perry Counties.

CRITERIA

The number and size of vertical drains shall be adequate to discharge the design drainage flow into the underlying stratum or strata. The number, size and location of the drains shall be based on a field determination of the depth, permeability, porosity, thickness, and extent of the strata. For sinkhole improvement, 12 inch diameter minimum pipe size shall be used for watershed areas of 10 acres or less and 18 inch diameter minimum pipe size shall be used for watershed areas between 10 and 20 acres in size. For watershed areas larger than 20 acres the pipe shall be designed to drain the 10 year frequency runoff for the watershed in 24 hours or less.

The minimum diameter of shallow uncased wells (wells without pipes) shall be 24 inches and of deep cased wells, 12 inches. Uncased wells using drainfill without a pipe shall have capacity to discharge the design drainage flow. Capacity of drainfill shall comply with permeability rates using Soil Mechanics Note 9.

A suitable filter system, desilting basin, or other means for removing sediment from the water before it enters the well shall be provided. Filter design will be determined using Soil Mechanics Note 1.

Well casings shall be of adequate strength and longevity to serve planned needs. Elevation of top of pipe inlet shall allow minimum of 0.5 foot of water over the pipe inlet. Pipe inlet may extend above ground level but must have holes to allow drainage to ground level.

PLANS AND SPECIFICATIONS

Plans and specifications for installing vertical drains shall be in keeping with this standard, and shall describe the requirements for properly installing the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

An Operation and Maintenance plan specific to the facilities installed shall be prepared for use by the landowner or operator responsible for operation and maintenance. The plan should provide specific instructions for operating and maintaining facilities to ensure they function properly.